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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,987

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EXAMINER

SINGAL, ANKUSH K

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,987	Applicant(s) YASUDA ET AL.	
	Examiner ANKUSH k. SINGAL	Art Unit 2895	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson(US 6,975,660) in view of Nakatsu et al. (US 5,900,642).

Re. claim 1, Johnson discloses a pn junction type Group III nitride semiconductor light-emitting device comprising a light-emitting layer of multiple quantum well structure in which well layers(120) and barrier layers(125) including Group III nitride semiconductors are alternately stacked periodically between an clad layer(108) and a

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clad layer(112) which are formed on a crystal substrate and which include Group III nitride semiconductors(Figure 12, columns 7-9).

Johnson does not teach wherein a first end layer of the light-emitting layer is closest to and opposed to the n-type clad layer, and the second end layer of the light-emitting layer is closest to and opposed to the p- type clad layer, both the first and second end layer are barrier layers, and the second end layer is thicker than the barrier layer of the first end layer.

However, Nakatsu et al. wherein a first end layer(b) of the light-emitting layer is closest to and opposed to the n-type clad layer, and the second end layer(b) of the light-emitting layer is closest to and opposed to the p- type clad layer, both the first and second end layer are barrier layers (Figure 9) so that the isoelectronic level in the light emitting layer and the quantum level in the barrier layer will fulfill the resonance conditions but does not teach the second end layer is thicker than the barrier layer of the first end layer. However Johnson and Nakatsu et al. in combination disclosure for given conditions of the claimed invention , the claim range is considered to be an obvious matter of finding an optimum workable range for some chosen design requirement utilizing Johnson and Nakatsu et al. in combination method.

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Note that it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves routine skill in the art. In re Aller, 105 USPQ 233.

Any difference in the claimed invention and the prior art may be expected to result in some differences in properties. The issue is whether the properties differ to such an extent that the difference is really unexpected. In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986)

Re. claims 2-4 as discussed above in claim 1, Johnson and Nakatsu et al. in combination disclose all the limitations as discussed above in claim 1 including the second end layer has joined thereto a well layer which is not intentionally doped with impurities (Figure 9, Nakatsu, Claim 4) except each of the barrier layers has a thickness increased gradually from the first end layer toward the second end layer and the second end layer has an impurity concentration lower at its junction portion relative to the well layer, highest at its central portion and reduced gradually from the central portion toward the p-type clad layer (Claims 2 and 3). However Johnson and Nakatsu et al. in combination disclosure for given conditions of the claimed invention, the claim range is considered to be an obvious matter of finding an optimum workable range for some chosen design requirement utilizing Johnson and Nakatsu et al. in combination method.

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Response to Arguments

In response to applicant's arguments, the claim objection has been withdrawn.

In response to applicant's argument, Page 5, lines 4-6 "... both end layers of the light emitting layers of quantum well structure to be barrier layers...", it is clear from Nakatsu et al., figure 9 that both end layers of the light emitting layer of multiple quantum well structure are barriers which makes the limitation read on the prior art. Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969). See *also In re Zletz, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) ("During patent examination the pending claims must be interpreted as broadly as

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their terms reasonably allow. . . . The reason is simply that during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed. . . . An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process.”).

In response to applicant's arguments, Page 5, lines 6-8 “... there is nothing in the description of Johnson et al. columns 7-8 which suggest that the barrier layer of the second barrier layer(21n) is thicker than the barrier layer of the first end layer(21m)...”, since the claim limitation does not have any evidence of criticality, the barrier layer of the second barrier layer(21n) is thicker than the barrier layer of the first end layer is optimizable.

In response to applicant's argument, Page 6, lines 3-5, “... the structure in which both end layers of the light emitting layers are barrier layers, dispersion carries toward the n-type and p-type clad layers is prevented more effectively...”, the claim does not teach the benefit of the both end layers of the light emitting layers being barrier layer.

In response to applicant's arguments, Page 6 “... Examiner has pointed to nothing in Johnson or Nakatsu et al. which suggests increasing the thickness of each of the barrier

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layers from the first end layer toward the second end layer..., the Examiner has pointed in claim 1 and other claims that barrier layers from the first and second end layer but since the claim has no evidence of criticality of increasing the thickness of each of the barrier layers from the first end layer toward the second end layer, the claim limitation has been optimized.

In response to applicant's arguments, Page 6 "... where the second end layer has an impurity concentration low at its junction portion relative to the well layer, highest at its central portion and reduced gradually from the central portion toward the p-type clad layer...", the Examiner has pointed the second end layer and the p-type clad layer but since the claim has no evidence of criticality of where the second end layer has an impurity concentration low at its junction portion relative to the well layer, highest at its central portion and reduced gradually from the central portion toward the p-type clad layer, the claim limitation has been optimized.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANKUSH K. SINGAL whose telephone number is (571)270-1204. The examiner can normally be reached on Monday-Friday 7am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Richards can be reached on (571)272-1736. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Fernando L. Toledo/

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Primary Examiner, Art Unit 2895

/Ankush k Singal/
Examiner, Art Unit 2895